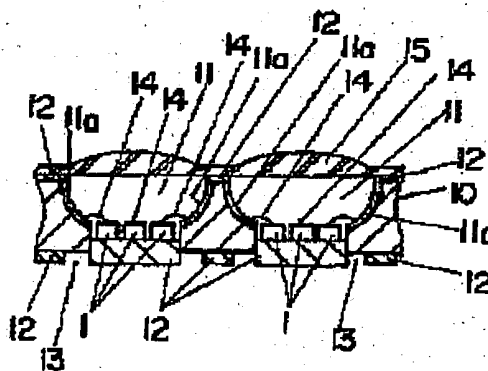


LED ILLUMINATOR**Patent number:** JP11163412**Publication date:** 1999-06-18**Inventor:** KAMATA SAKUO; KOYAMA SHOICHI; ASAHINOBUYUKI; SUZUKI TOSHIYUKI; SHIOHAMA EIJI; SUGIMOTO MASARU; YAMAMOTO SHOHEI; HASHIZUME JIRO; AKIBA YASUSHI; TANAKA KOJI**Applicant:** MATSUSHITA ELECTRIC WORKS LTD**Classification:****- International:** H01L33/00**- european:****Application number:** JP19970322626 19971125**Priority number(s):****Abstract of JP11163412**

PROBLEM TO BE SOLVED: To provide a LED illuminator which can easily obtain arbitrary luminous intensity distribution characteristic, while being formed thin.

SOLUTION: A large number concavities 11 are arranged vertically and horizontally on one side of a rectangular plate-type molded interconnection device(MID) substrate 1, and three LED chips are implemented on the bottom of each concavity 11. Since a plurality of LED chips 1 are implemented in each of the concavity 11 and positioned three-dimensionally on MID substrate 10, arbitrary luminous intensity distribution characteristic can be easily obtained according to the shape of the substrate 10, while forming a module thin. If the plurality of the LED chips 1 are implemented, which have one or more different luminescent colors, preferably at least three colors of red, blue and green, delicate color differences such as white light of a fluorescent lamp and daylight can be realized in the light of the overall module by mixing the luminescent colors from each of LED chips 1.



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